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## A NEW SPECIES OF GRASSHOPPER OF THE GENUS *CHLOEALTIS* (ACRIDINAE) FROM THE PACIFIC COAST

BY JAMES A. G. REHN AND MORGAN HEBARD

In Oregon, a short distance north of the California line, the railroad between Portland and San Francisco winds its course up from the Rogue River Valley into the eastern portion of the Siskiyou Mountains, and, finding a way through, drops into the broad Klamath River region of California. At the little station of Siskiyou, at forty-one hundred feet elevation, is the highest point of this crossing of the mountains. The heavily wooded slopes rise sharply from the little valley, up which the railroad winds its way to the tunnel piercing the final barrier of the mountains. On August 13, 1909, the authors spent some hours collecting Orthoptera in this vicinity, examining particularly the slopes to the west of the track, reaching the summit of the ridge on that side, which is at an elevation of fifty-eight hundred feet.

From forty-two hundred to five thousand feet, the very steep slopes were covered with a heavy and truly magnificent forest of fir and pine, above which alpine hemlock became evident and the whole forest more open with scanty undergrowth. At fifty-six hundred feet we entered a summit bald, treeless but covered with an almost impenetrable bushy scrub, four to five feet high, through which were scattered grassy areas, especially along the lower edge of the bald. In the more open forest above five thousand feet and in the grassy areas of the summit bald we found a most active grasshopper belonging to the genus *Chloealtis*. Knowing the interest attached to the capture of this genus many hundreds of miles away from the previously known occurrence of either of its species, we made special effort to secure individuals. It was, however, not common, and we were compelled to be satisfied with a series of two males, three females and one immature female. In the timber we found the species near dead branches and its oviposition is doubtless performed in a similar fashion to that of the other species of the genus. The form is quite distinct from the others of the genus and we here describe it.

**Chloealtis aspasma**<sup>1</sup> new species

A striking species which can be readily distinguished from both of the previously known species of the genus (*conspersa* and *abdominalis*) by the more slender form, the more produced and distinctly acute-angulate fastigium when seen from the dorsum, in both sexes, the more retreating face and more produced fastigio-facial angle and the distinctly obtuse-angulate caudal margin of the pronotal disk. The female sex has, in addition, one feature which is interesting in its bearing on the value of a classic differential character used in the subfamily Acridinae (Truxalinae). The fastigium in *C. conspersa* has no appreciable lateral foveolae in either sex; in *C. abdominalis* we find hardly any more indication although the fastigial margins are broader; in *C. aspasma* the male sex has indications of foveolae, which are lateral and hardly visible from the dorsum, while in the female sex we find similar indications which are clearly visible from the dorsum. The three species are unquestionably congeneric, with *aspasma* showing affinity with each of the others in certain features. In the general pronotal form the new species more nearly resembles *abdominalis*, in the tegminal structure of both sexes it approaches *conspersa* more nearly than *abdominalis*, the form and sculpture of the ovipositor jaws is also more like the condition found in *conspersa* than in *abdominalis*, while the form of the caudal limbs is more as in *abdominalis*.

The indication of the lateral foveolae with fair distinctness, and also their visibility from the dorsal surface in the female sex, immediately suggests relationship with the Gomphoceri and Scyllini sections of the subfamily. It would seem from the evidence of the genus *Chloealtis*, as well as tendencies observed in other genera of the subfamily, that, unless deeply excavate and sharply delimited, the pitting of the lateral foveolae is not as fundamental a character as generally supposed. This also would appear to be true of the exact position of the lateral foveolae, when indicated, as we have in the present species proof of their position differing in the sexes of the same form. That the sexes in hand represent one species, and that this species is a member of the genus *Chloealtis* are incontestable conclusions, from which we are naturally led to deduct that the dorsal position of the lateral foveolae

<sup>1</sup> From ἀσπασσα, welcome.

is not as invariable an indication of the Gomphoceri-Scyllini division of the subfamily as had previously been supposed. Tendencies similar to those found in *C. aspasma* are indicated in the South American genus *Coccyotettix*, but to a less marked degree.

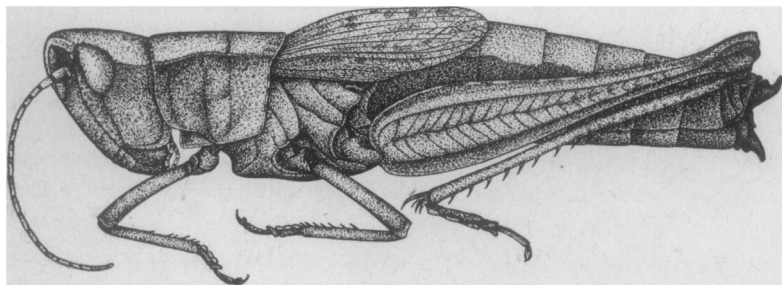


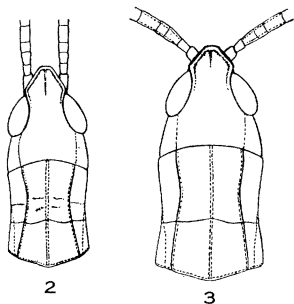
Figure 1. *Chloaltis aspasma* new species. Lateral view of type. ( $\times 4$ )

*Type*.—♀; Siskiyou, Siskiyou Mountains, Jackson County, Oregon. Elevation, 5000 to 5800 feet. August 13, 1909. (Rehn and Hebard.) [Hebard Collection, Type no. 483.]

*Description of Type*.—Size small (for the genus): form moderately compressed. Head with its exposed dorsal length slightly less than the dorsal length of pronotal disk, not elevated dorsad of same; interspace between eyes subequal to two-thirds of greatest fastigial width: fastigium with length from eye interspace less than greatest fastigial width, in form slightly more acute than a right-angle when seen from the dorsum, the apex rounded, the dorsal surface of fastigium weakly impressed within its margins, a faint medio-longitudinal carina present on the fastigium and interocular region, becoming obsolete on the occiput: lateral foveolar surfaces visible from the dorsum, the surfaces directed distinctly dorso-cephalad, the impression of the foveolae formed of punctures and without clearly defined shape; fastigio-facial angle, when seen in profile, rather narrowly rounded, face decidedly retreating; frontal costa relatively broad, narrowed dorsad at its junction with the fastigium, subequal in width thence to the median ocellus, thence the margins of the costa regularly diverge and become subobsolete ventrad; surface of the costa rather thickly punctate, faintly and narrowly sulcate mesad for a short distance ventrad of the median ocellus: eyes in basal outline short and broad ovoid, the length of the eye less than the depth of the infra-ocular portion of the genae; when seen from the dorsum the eyes are not at all prominent: antennae almost two and one-half times as long as pronotal disk, flattened to some extent in the greater portion of their length, weakly expanded in proximal third.

Pronotum with greatest caudal width of its dorsal surface contained one and one-half times in the greatest length of the same: cephalic margin of disk moderately arcuate, caudal margin of disk broad obtuse-angulate, the im-

mediate angle entire and not markedly rounded; lateral carina of pronotal disk distinct, in general arcuate, appreciably converging caudad to slightly before



Figures 2 and 3. *Chloealtis aspasma* new species. Dorsal outlines of head and pronotum of male allotype (fig. 2) and female type (fig. 3). ( $\times 4$ )

the middle of the pronotum, thence diverging at about the same angle to the caudal pronotal margin, when seen from the side the lateral carina is appreciably bent-arcuate dorsad, the least width of the pronotal disk is equal to slightly more than three-fourths that of the cephalic margin of the same; median carina decided, straight when seen in profile; transverse sulcus intersecting the median and lateral carinae faintly caudad of the middle of the disk: lateral lobes of the pronotum slightly longer than deep, cephalic margin faintly sinuate, ventro-cephalic angle rounded obtuse-angulate, ventral margin strongly sinuate-emarginate cephalad, straight caudad, ventro-caudal angle rounded rectangulate, caudal margin moderately oblique, faintly sinuate.

Tegmina equal in length to that of the head and pronotum combined, falling considerably short of the apex of the abdomen, in form elongate lanceolate, the greatest width, which is faintly proximad of the middle, contained two and three-fifths times in the greatest length, apex narrowly rounded: marginal field moderately expanded, regularly narrowing distad from point of greatest width of tegmen, the costal margin rounded obtuse-angulate at point of greatest width: venation well indicated. Wings greatly reduced.

Mesosternum with interspace subquadrate, weakly transverse, slightly widening caudad, caudo-internal angles of mesosternal lobes broadly rounded: metasternum with interspace moderately transverse, about two-thirds as wide as the mesosternal interspace. Abdomen distinctly compressed, with a prominent medio-longitudinal carina dorsad and a similar but less decided one ventrad: supra-anal plate elongate semi-elliptical in marginal outline, the apex weakly angulate, in transverse section the plate is arcuate, with a transverse depressed section, poorly defined, mesad: cerci short, styliform: dorsal ovipositor jaws short, deep, robust, of the general type found in the other species of the genus, the apices strongly recurved, the dorsal surface deeply concavo-excavate, main external marginal cusp rather low, long, compressed, the margin of the same as a whole entire but with very minute serrulations evident under medium magnification, basal cusp decided, subpyramidal, transverse, its margin finely serrulate; ventral ovipositor jaws moderately compressed, apices little decurved, ventral marginal tooth rectangulate at apex.

Cephalic and median limbs relatively slender. Caudal femora moderately slender, the length three times as long as the dorsum of the pronotum, greatest depth contained nearly four and one-half times in greatest length of same: caudal tibiae slightly shorter than the caudal femora, external margin with eleven to twelve spines, internal margin with twelve spines; internal calcaria moderately unequal, the dorsal the shorter.

*Allotype*.—♂; same data as type. [Hebard Collection.]

*Description of Allotype*. Differing from the description of the type in the following features.

Fastigium with greatest width subequal to length of same from eye interspace, in form distinctly acute-angulate when seen from the dorsum, the immediate apex blunt and rounded, the dorsal surface of fastigium broadly but shallowly impressed, the margins appreciably and the median carina slightly elevated: lateral foveolar surfaces hardly visible from the dorsum, not reflected toward the dorsal surface, impression of same as in female but more concentrated and limits more evident; fastigio-facial angle, when seen in profile, more narrowly rounded than in female, face more retreating: frontal costa narrower, faintly constricted at median ocellus, distinctly sulcate for a considerable distance dorsad and a lesser distance ventrad of the same: eyes with greatest length subequal to the greatest depth of the infra-ocular portion of genae, cephalic margin of basal outline less strongly truncate, more arcuate: antennae about two and two-thirds times as long as the pronotal disk, flattening of segments less extensive than in female.

Pronotum with cephalic margin of disk weakly obtuse-angulate, caudal margin of same with angulation obtuse but slightly more marked in degree than in the female: lateral lobes with ventral margin oblique truncate cephalad, caudal margin faintly concave. Tegmina falling short of the apex of the abdomen by about the length of the pronotal disk, the discoidal field weakly inflated; greatest width of marginal and discoidal fields combined subequal to greatest depth of caudal femur, greatest width of these fields at distal fourth; marginal field with expansion regular from the very weak basal lobe to the distal fourth, thence the marginal field is rather sharply emarginate and narrowed to the apex of tegmen. Wings greatly reduced.

Metasternal interspace slightly more narrow than in female. Abdomen compressed, carinate dorsad, non-carinate ventrad: supra-anal plate trigonal, apex acute, lateral margins sinuate and broken at proximal third, a transverse depression present here, a broad medio-longitudinal one present proximad and the distal third of plate is slightly elevated: cerci simple, heavy, styliform, reaching to apex of supra-anal plate: subgenital plate weakly compressed, faintly rostrate, apex bluntly produced.

Caudal femora with length slightly more than three times as long as the pronotal disk, caudal tibiae with twelve to thirteen spines on external, and twelve on internal margins.

*Color Notes*.—General color ranging from argus brown to mummy brown, occasionally (type and allotypic male) with dorsal surface of head, pronotum, abdomen and greater portion of tegmina ochraceous-tawny to buckthorn brown. Rarely (allotypic male) this paler area is hardly indicated on head and pronotum, and is tawny on the abdomen and dull buckthorn brown on tegmina. Face occasionally (allotypic male) paler—buckthorn brown, this due to a reduction in the number of dark specklings which deepen the general tone in the other individuals: antennae ochraceous-tawny to russet, darkened with prout's brown distad: eyes mars brown to saccardo's umber, but little contrasted with

dorsal surface. General color of genae, lateral lobes of pronotum and pleura contrasted with pale dorsum in specimens having latter, giving the impression of broad, dark, poorly defined post-ocular bars, in both males augmented by poorly defined fuscous blotches on the lateral lobes and less distinctly so on the postocular section of genae. Tegmina in all at least faintly paler than the sides of the body, generally finely quadrato-maculate on anal, and in one case (type) on discoidal, field with the general color; vicinity of marginal field of general color. Abdomen with dorsal surface always paler than lateral surfaces, contrast decided. Limbs as a whole of the general color: caudal femora with three indefinite pale cross bars on dorsal surface, these occasionally subobsolete; external surface of caudal femora with a small, median, pale spot; ventral surface of caudal femora and ventral surface of body ranging from dresden brown to weak ochraceous-orange, the apex of ventral surface of male abdomen clear ochraceous-orange, genicular region of caudal femora and proximal portion of caudal tibiae infuscate: caudal tibiae ranging from ferruginous to english red, distal extremity, and to a lesser degree caudal tarsi, infuscate; spines black tipped.

The female in instar preceding maturity has a generally uniform medal bronze coloration, the caudal femora tending toward citrine, caudal tibiae with suggestion of the coloration of the same in adult.

*Measurements (in millimeters)*

	Length of body	Length of pronotum	Greatest caudal width of pronotal disk	Length of tegmen	Greatest width of tegmen	Length of caudal femur
♂ <i>allotype</i> . . . . .	17.5	3.6	2.1	8.6	2.5	11.6
♂ <i>paratype</i> . . . . .	17	3.4	2.2	8.4	2.4	11
♀ <i>type</i> . . . . .	23	4.2	2.8	7.3	2.9	13
♀ <i>paratype</i> . . . . .	23.5	4.5	3	8	3	13
♀ <i>paratype</i> . . . . .	23.4	4.9	3.1	8.4	3	14.5

In addition to the typical pair we have before us the other specimens (1 ♂, 2 ♀, 1 immature ♀) secured at the same time. The female paratypes show more indication of sulcation of the frontal costa than the type, one appreciably more. In the female paratypes the tegmina are slightly more tapering distad than in the type.

The immature female in the instar preceding maturity is of particular interest, as it has the lateral foveolae well indicated, but no more evident from the dorsal surface than in the adult male. This would indicate that this condition in the adult female is not a primitive one.

*Tentative Key to Species of the Genus Chloea*

The present key is based solely on the more evident features of the species and their use here is not to be understood as an ex-

pression of opinion by the authors as to their real importance. The key is a largely artificial means for recognizing the species of the genus—more than that is not expected of it by the authors.

A. Caudal margin of disk of pronotum truncate.. Lateral carina of pronotum weakly incurved. Caudal femora proportionately more robust. (Lateral foveolae not evident.) **conspersa** Harris

AA. Caudal margin of disk of pronotum obtuse-angulate. Lateral carina of pronotum markedly incurved or in-bent on prozona. Caudal femora proportionately more slender.

B. Form more compressed. Caudal margin of disk of pronotum weakly obtuse-angulate. Face moderately retreating. Female with lateral foveolae of fastigium not evident. Tegmina of male broad, considerably inflated; of female (normal type) shorter, broad ovate-lanceolate.

**abdominalis** (Thomas)

BB. Form less compressed. Caudal margin of disk of pronotum distinctly obtuse-angulate. Face markedly retreating. Female with lateral foveolae of fastigium indicated by strongly punctate depressions, visible from dorsum. Tegmina of male of average width, weakly inflated; of female longer, elongate lanceolate. . . . . **aspasma** new species